The Peculiar Periodic Young Stellar Object WL 4

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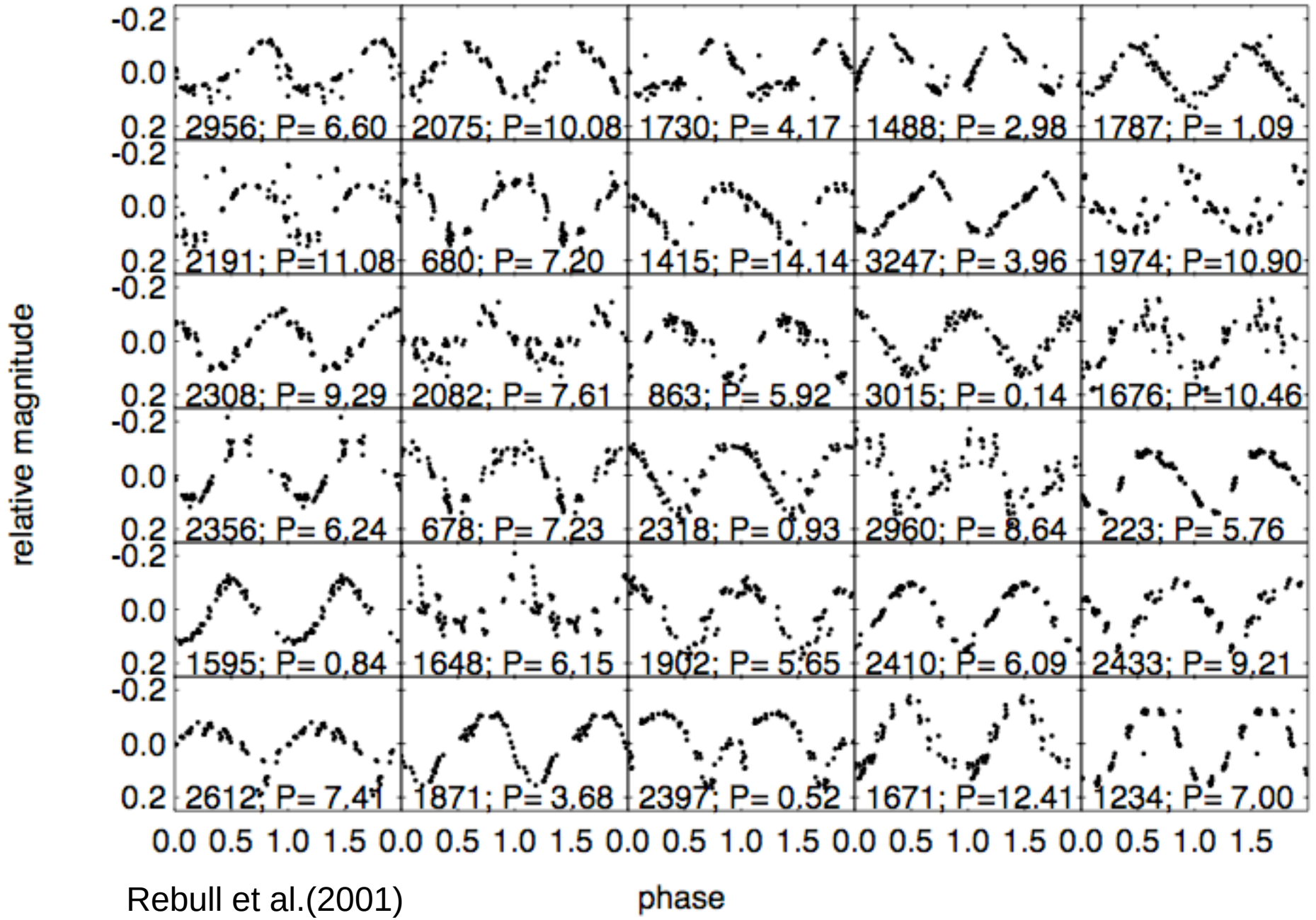
ApJL, submitted



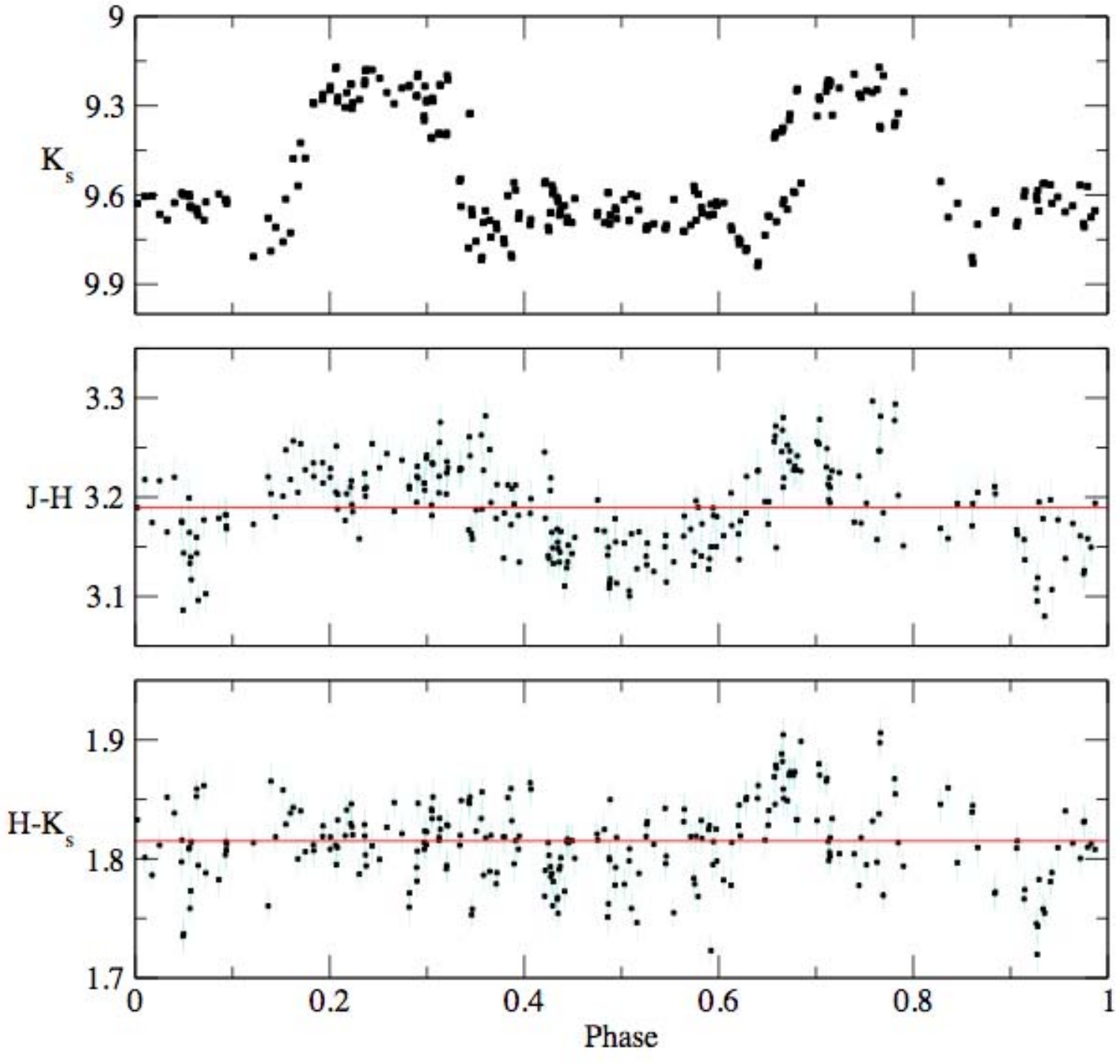
Rebull et al.(2001)

The 2MASS Calibration Fields

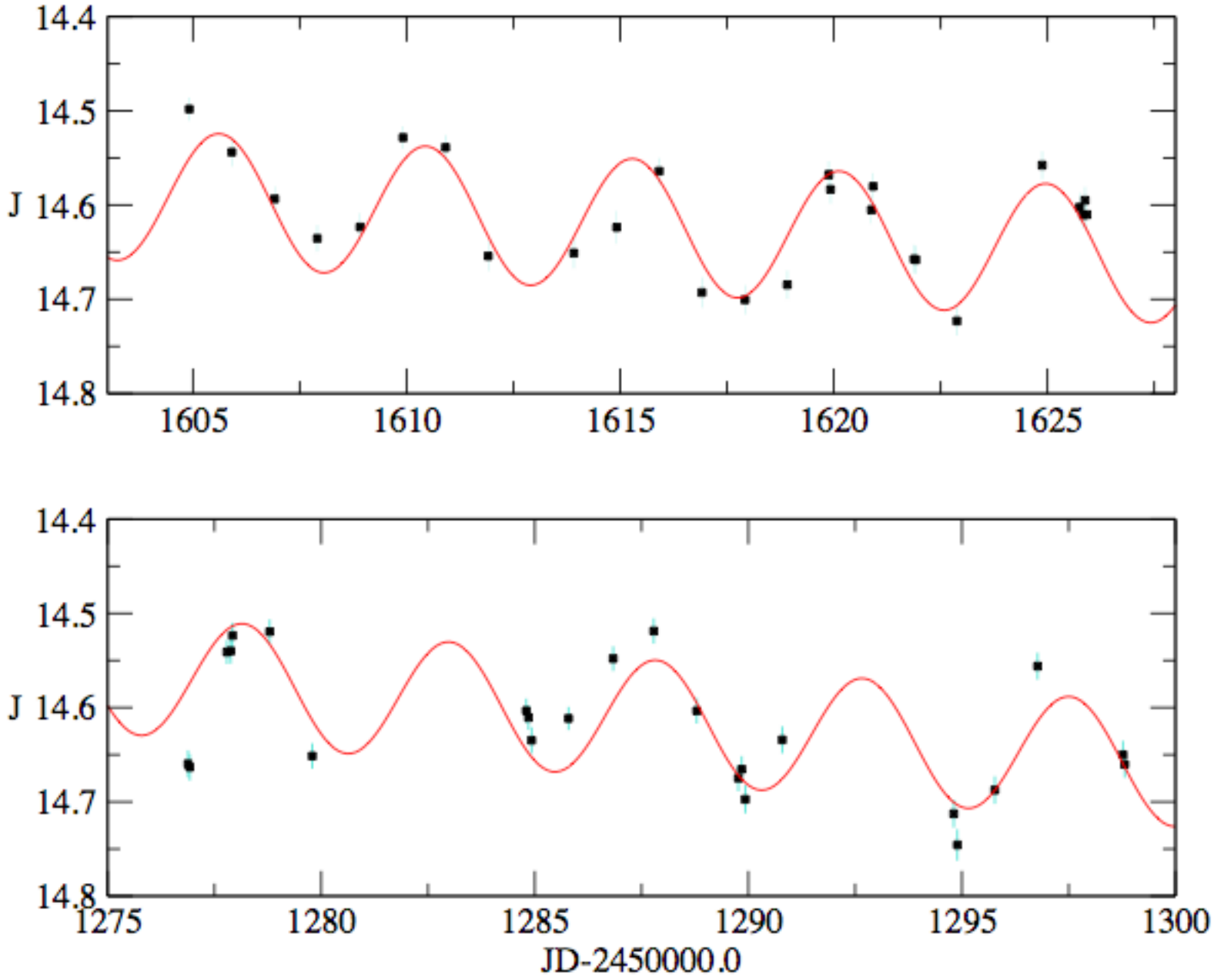
- 8.5'x1^{o} field covering part of Rho Ophiuchus

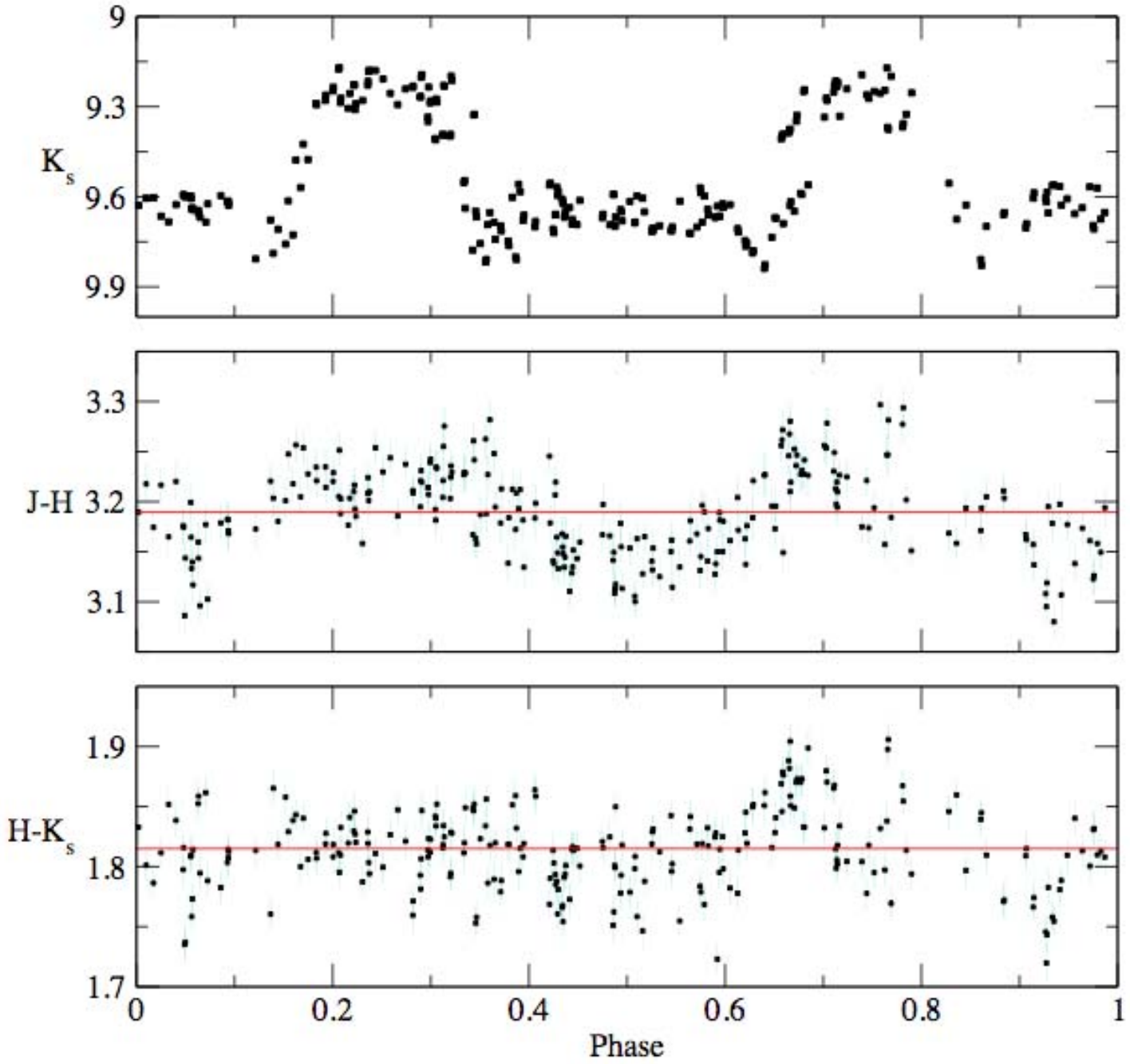
- Multi-band: J,H, & K_s
  - Same observing strategy as the 2MASS Survey
- Multi-epoch: 264 repeated observations
  - Field typically visited once per day, ~3 months per year
- Data now public! (http://www.ipac.caltech.edu/2mass/)

- We compile a catalog of variable and periodic sources in the Rho Ophiuchus field



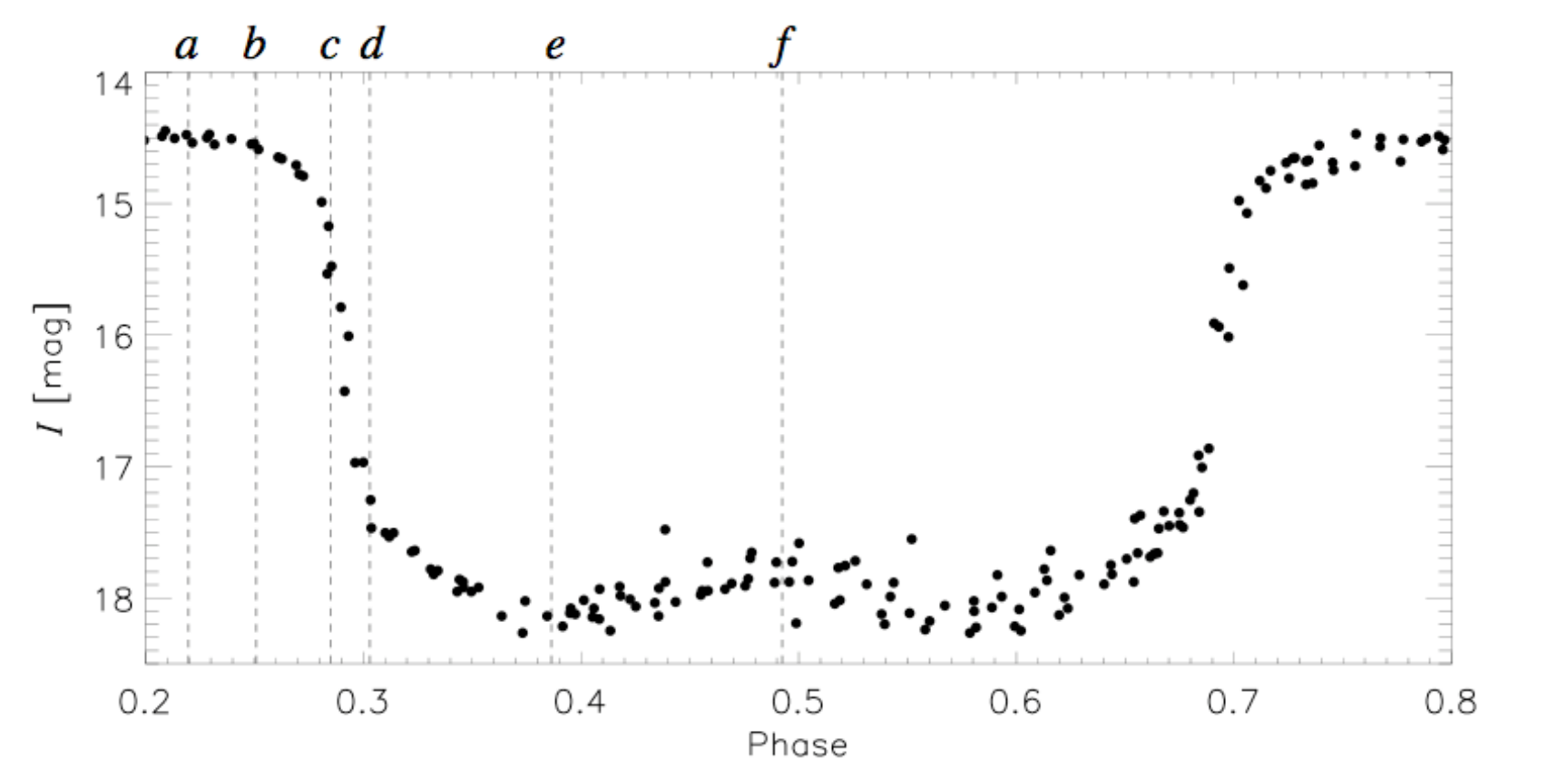
WL 4
130.87 days


14.4
14.5
J 14.6
14.7
14.8
1605
1610
1615
1620
1625
14.4
14.5
J 14.6
14.7
14.8
1275
1280
1285
1290
1295
1300
JD-2450000.0

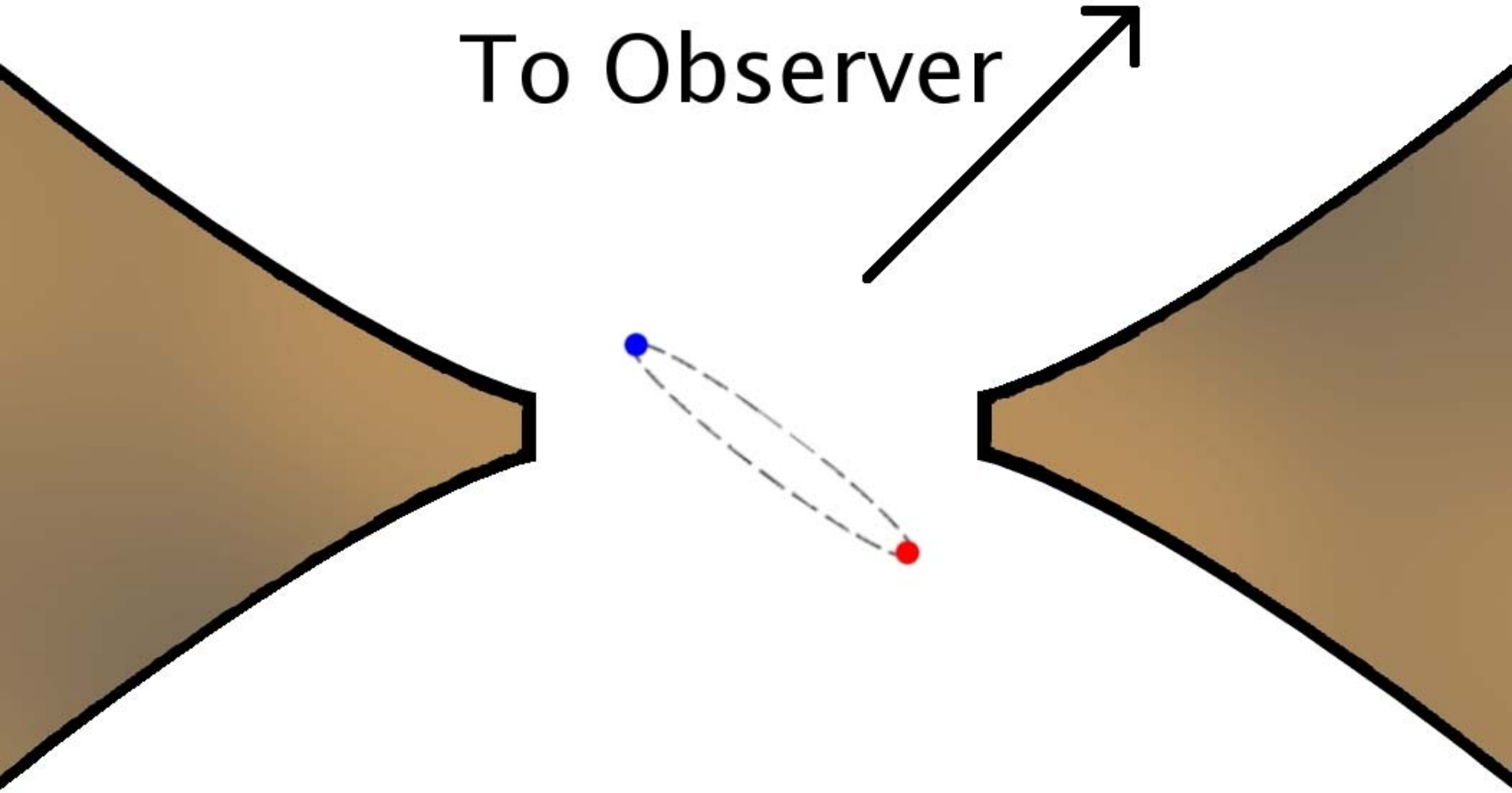


WL 4
130.87 days

KH-15D: ~48 day period

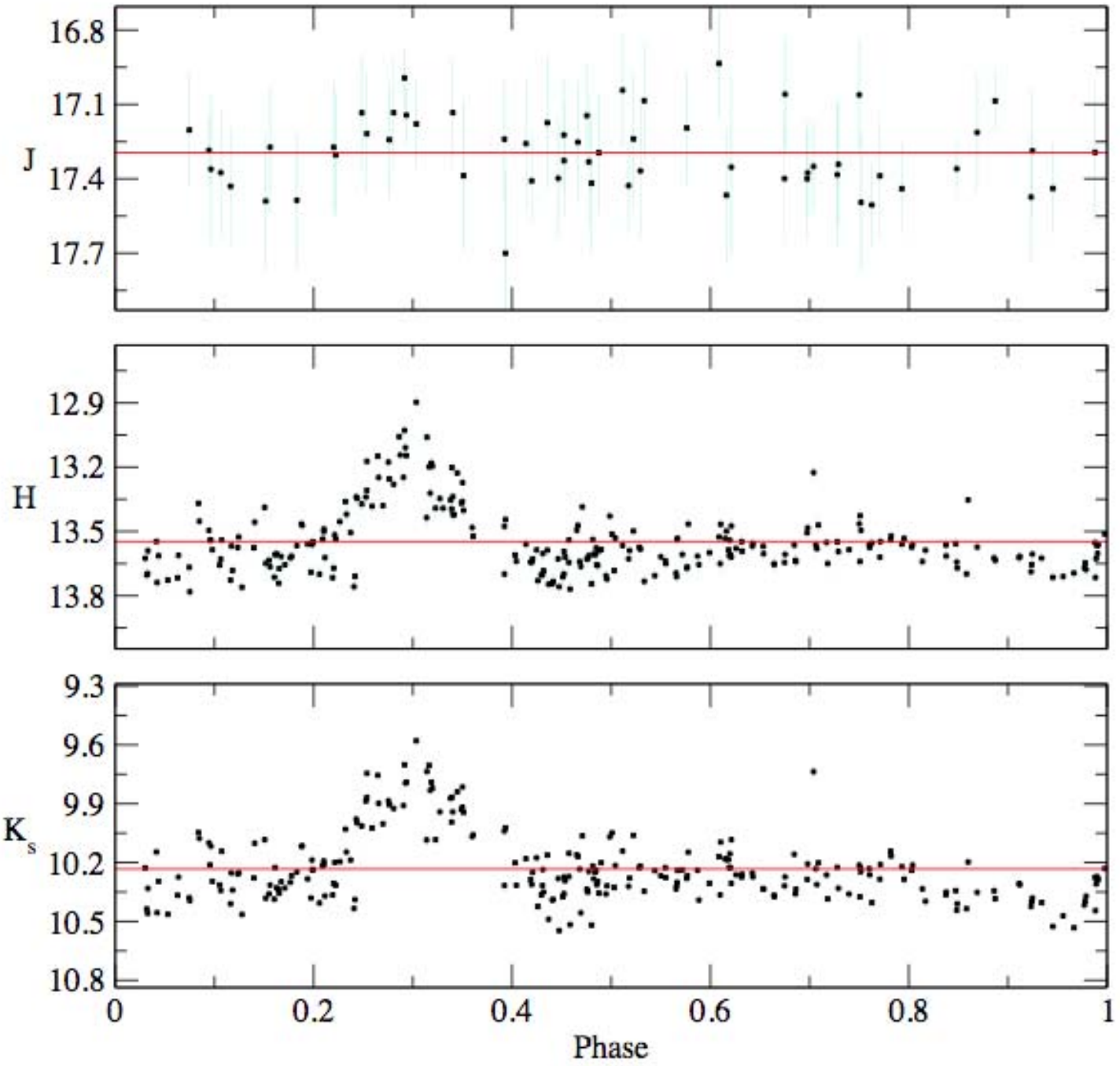


Winn et al. (2006)


To Observer

Conclusions

- WL 4 is a natural probe of the inner terrestrial zone structure and composition of low-mass primordial disks
- 2MASS Calibration Field in Rho Ophiuchus offers an unprecedented look at YSO variability
- KH-15D is not unique
- More to be unveiled at longer wavelengths?
- “Oh, and one more thing…” ⇒


16.8
17.1
J
17.4
17.7
12.9
13.2
H
13.5
13.8
9.3
9.6
9.9
K_s
10.2
10.5
10.8
0
0.2
0.4
0.6
0.8
1
Phase

92.70 days